REMARKS

With entry of this Amendment, claims 1-13 and 21-38 are pending. Claims 1, 13 and 35 are amended, claims 36-38 are added, and claims 17-19 are cancelled (rendering the rejections of claims 17-19 moot), leaving claims 2-12, and 21-34 unchanged. Claims 14-16 and 20 were canceled in an earlier Amendment. Claim 13 is hereby amended to address a typographical error.

In view of the arguments below, the Applicant respectfully requests allowance of claims 1-13 and 21-38.

CLAIM REJECTIONS UNDER 35 U.S.C. §112

On pages 2 and 3 of the Office action, claims 21-34 are rejected under 35 U.S.C. §112, first paragraph, as containing subject matter not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

As discussed with the Examiner in the Examiner's interview on March 15, 2005 and as reported in the Examiner's Interview Summary dated March 17, 2005, the specification of the originally-filed application does disclose independent movement of the X, Y controller and X, Y translation stage. For example, on page 15, lines 1-4 of the originally-filed application, the following description is provided: "[t]he loading substrate 27 is then moved by the X, Y translation stage 18 out of position beneath the probe 12. The X, Y controller 14 then moves the deposition substrate 25 into position underneath the probe 12." The description of the sequential movement of the X, Y translation stage 18 and the X, Y controller 14 (and loading substrate 27 and deposition substrate 25, respectively) demonstrates that independent movement of the X, Y controller and the X, Y translation stage was described in the originally-filed specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors had possession of the claimed invention at the time of filing. The Applicants therefore respectfully submit that the subject matter of previously amended claims 21-34 does not constitute new matter.

As stated in the Examiner's Interview Summary, the Examiner agreed that the portions of the specification (e.g., page 15, lines 1-4) that describe sequential movement of the X, Y translation stage and the X, Y controller do support independent movement of the X, Y translation stage and the X, Y controller, and would most likely overcome the above new matter rejection. Accordingly, withdrawal of the 35 U.S.C. §112 rejections of claims 21-34 is respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. §102

On pages 4-7 of the Office action, claims 21, 34 and 35 are rejected under 35 U.S.C. §102(a) as being anticipated by Hong et al. (Science, 9 June 2000, 288: 1808-1811), and claims 1, 2, 7, 8, 10, 21, 22, 27, 28, 30 and 35 are rejected under §102(a) as being anticipated by Leighton et al. (WO 99/44063, published 2 September 1999).

Independent claims 1, 21, 34 and 35

Claim 1 is hereby amended, and calls for, among other things:

> "...an X, Y controller coupled to the base, wherein the X, Y controller is selectively positionable in an X-Y plane independently of movement of the Z controller, the X, Y controller further comprising a deposition substrate coupled thereto and wherein the movement of the X, Y controller moves the deposition substrate between a first position and a second position, the second position being located under the deposition probe; and
>
> an X, Y translation stage coupled to the base wherein the X, Y translation stage is selectively positionable in an X-Y plane independently of movement of the X,Y controller, the X, Y translation stage further comprising a loading substrate coupled thereto and wherein the movement of the X, Y translation stage moves the loading substrate between a first position and a second position, the second position being located under the deposition probe" (underlining added for emphasis).

Claim 21 calls for, among other things:

> "...an X, Y translation stage coupled to the base wherein the X, Y translation stage is selectively positionable along the X axis, and the Y axis, the X, Y translation stage further comprising a loading substrate coupled thereto and wherein the movement of the X, Y translation stage moves the loading substrate between a first position and a second position, the second position being located under the deposition probe; and

an X, Y controller coupled to the base wherein the X, Y controller is selectively positionable along the X axis, and the Y axis independently of the X, Y translation stage, the X, Y controller further comprising a deposition substrate coupled thereto and wherein the movement of the X, Y controller moves the deposition substrate between a first position and a second position, the second position being located under the deposition probe" (underlining added for emphasis).

Claim 34 calls for, among other things:

"...an X, Y translation stage coupled to the base and movable in X and Y directions;

a loading substrate coupled to the X, Y translation stage where the loading substrate is selectively movable in the X and Y directions and into a position under the deposition probe;

an X, Y controller coupled to the base and movable in the X and Y directions independently with respect to the X, Y translation stage;

a deposition substrate coupled to the X, Y controller where the deposition substrate is selectively movable by the X, Y controller into a position under the deposition probe..." (underlining added for emphasis).

Claim 35 is also hereby amended, and calls for, among other things:

"...a loading substrate coupled to the base and movable relative to the deposition probe in an X-Y plane, the loading substrate movable between a first position in the X-Y plane in which the loading substrate is not positioned under the deposition probe and a second position in which the loading substrate is positioned under the deposition probe to allow the deposition probe to pick up material from the loading substrate; and

a deposition substrate coupled to the base and movable relative to the deposition probe in an X-Y plane, the deposition substrate movable independently of movement of the loading substrate between a first position in the X-Y plane in which the deposition substrate is not positioned under the deposition probe and a second position in which the deposition substrate is positioned under the deposition probe to allow the deposition probe to deposit material onto the deposition substrate."

As discussed with the Examiner during the telephone interview with the undersigned Applicant's Representative on March 15, 2005, and as shown in Scheme 1 and described in the paragraph beginning on page 1808 and ending on page 1809 of Hong et al., Hong et al. teach one

X-Y-Z translation stage, on which the sample is positioned, and ink and rinsing wells located at the periphery of the sample to be patterned. The stage (upon which ink wells are located) and the structure upon which a sample is located in Hong et al. are compared by the Examiner to the deposition and loading substrates, respectively, claimed in claims 1, 21, 34, and 35 of the present application. Hong et al. teach movement of one stage on which structures (i.e., "ink wells") are positioned and a structure (i.e., "sample") is positioned.

Thus, Hong et al. fails to teach, describe or suggest an X, Y translation stage selectively positionable along X and Y axes, and an X, Y controller selectively positionable along the X and Y axes independently of the X, Y translation stage as claimed in amended claim 21; an X, Y translation stage movable in X and Y directions, and an X, Y controller movable in the X and Y directions independently with respect to the X, Y translation stage as claimed in claim 34; or a loading substrate movable relative to a deposition probe in an X-Y plane, and a deposition substrate movable relative to the deposition probe in an X-Y plane and movable independently of movement of the loading substrate as claimed in amended claim 35.

Similarly, and as also discussed with the Examiner in March 15, 2005 Examiner's Interview, Leighton et al. teaches a single stage 100 having a single x drive 102 and a single y drive 104, each of which rotates about a respective drive shaft 106, 108 (see FIGS. 13-17 and page 13, line 22 through page 14, line 28 of Leighton et al.). The shaft 108 corresponding to the y drive 104 moves a specimen bench 110 in a y direction, and the shaft 106 corresponding to the x drive 106 moves a tray 112 on the bench 110 in an x direction. Leighton et al., page 13, lines 23-25. Three recipient containers 116, 118 and 120 are mounted on the tray 112, and a donor container 128 and multi-well donor trays 132, 134 are also mounted on the tray 112. Id., page 13, lines 26-27. As further described on pages 13-14 of Leighton et al., Leighton et al. teach a method of sequentially driving the x drive 102 and the y drive 104 to move the tray 112 relative to a stylet drive 142, a recipient punch drive 146 and a donor punch drive 148. Thus, Leighton et al. teach movement of the single tray 112 on which both recipient containers 116, 118 and 120 and donor containers and trays 128, 132 and 134 are mounted.

Thus, Leighton et al. fail to teach, describe or suggest an X, Y controller selectively positionable in an X-Y plane, and an X, Y translation stage selectively positionable in an X-Y plane independently of movement of the X,Y controller," as claimed in amended claim 1; an X,

Y translation stage selectively positionable along an X axis and a Y axis, and an X, Y controller selectively positionable along the X axis and the Y axis independently of the X, Y translation stage as claimed in claim 21; or a loading substrate movable relative to a deposition probe in an X-Y plane, and a deposition substrate movable relative to the deposition probe in an X-Y plane, wherein the deposition substrate is movable independently of movement of the loading substrate as claimed in amended claim 35.

Therefore, neither Hong et al. nor Leighton et al. teach independent movement of an X, Y controller and an X, Y translation stage in an X-Y plane as claimed in amended claim 1, along X and Y axes as claimed in claim 21, or in X and Y directions as claimed in claim 34. In addition, neither Hong et al. nor Leighton et al. teach independent movement of a loading substrate and a deposition substrate in an X-Y plane as claimed in amended claim 35.

Clearly, such capability can provide enhanced functionality of an arraying apparatus, such as by enabling greater relative and independent movement of arrayer components in generating arrays. Independently controlling and moving a loading substrate and a deposition substrate relative to one another (either directly or via an X, Y controller and an X, Y translation stage) can add a greater degree of computer processing, control and flexibility to the overall system.

Accordingly, and for other reasons not discussed herein, withdrawal of the 35 U.S.C. §102(a) rejections of claims 1, 21, 34 and 35 is respectfully requested.

Dependent claims 2-13 and 22-33

Claims 2-13 and 22-33 are each ultimately dependent upon amended claims 1 and 21, respectively, and are therefore allowable based upon amended claims 1 and 21, and upon other features and elements claimed in claims 2-13 and 22-33 but not discussed herein.

CLAIM REJECTIONS UNDER 35 U.S.C. §103

On pages 7-14 of the Office action, claims 1-13, 21-33 and 34 are rejected under 35 U.S.C. §103(a) as being unpatentable over Mirkin et al. (U.S. Patent No. 6,635,311, filed 5 January 2000) and Hong et al. as taught by Hohn et al (U.S. Patent No. 5,150,392, issued 22 September 1992).

As discussed above, Hong et al. fails to teach, describe, or suggest independent movement of an X, Y controller and an X, Y translation stage in an X-Y plane as claimed in amended claim 1, along X and Y axes as claimed in claim 21, or in X and Y directions as claimed in claim 34.

Both Mirkin and Hong et al. describe very similar nanoplotters, and differ only in details that are not relevant to the pending claims of the present invention (see page 7 of the Office action). Hohn et al. is cited for teaching independent control of an AFM pin to provide precise control of a gap between the pin and a substrate. Even if Hohn et al. did adequately teach independent control of an AFM pin relative to a substrate (and the Applicants do not concede this point), neither Mirkin nor Hohn et al. cure the deficiencies of Hong et al. described above with respect to the elements and features of claims 1, 21 or 34. Specifically, neither Mirkin nor Hohn et al. provide any information regarding independent movement of an X, Y controller and an X, Y translation stage, as claimed in claims 1, 21 and 34.

Accordingly, and for other reasons not discussed herein, withdrawal of the 35 U.S.C. §103(a) rejections of claims 1, 21 and 34 is respectfully requested.

Dependent claims 2-13 and 22-33

Claims 2-13 and 22-33 are each ultimately dependent upon amended claims 1 and 21, respectively, and are therefore allowable based upon amended claims 1 and 21, and upon other features and elements claimed in claims 2-13 and 22-33 but not discussed herein.

NEW CLAIMS

Claims 36-38 are hereby added to further claim that which the Applicant regards as the invention. The Applicant respectfully submits that claims 36-38 are patentable over Hong et al., Leighton et al, Mirkin, Hohn et al., and the other cited references – taken alone or in any combination. Accordingly, the Applicant respectfully requests allowance of claims 36-38.

CONCLUSION

In view of the amendments and remarks presented herein, it is respectfully submitted that the claims as amended are in condition for allowance. The Applicant requests that the Examiner telephone the attorneys of record in the event a telephone discussion would be helpful in advancing the prosecution of the present application.

Respectfully submitted,

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